

Technical parameters

General Specification		Receiver	
Frequency Range	UHF: 350-400 MHz, 400-470MHz, 450-520 MHz	Digital sensitivity	5% BER: 0.225 μ V
Number of zones	100	Analog sensitivity	0.225 μ V (12 dB SINAD)
Channel Capacity	1600	Intermodulation	≥ 65 dB
Channel Spacing	12.5KHz/25KHz	Adjacent Channel Selectivity	≥ 60 dB/12.5KHz, ≥ 70 dB/25KHz
Working method	Semi-duplex or simplex relay	Spurious suppression	≥ 70 dB
Operation Voltage	DC 13.8V($\pm 20\%$); AC 100-240V	FM noise	-40dB@12.5KHz, -45dB@25KHz
Frequency stability	± 0.5 ppm	Frequency response	+1/-3 dB
Antenna Impedance	50 Ω	Rated audio output power	3W(speaker)
Dimension	282(L)*241(W)*56(H) mm	Audio Distortion	3%(typical)
Weight	3.2Kg	Conducted spurs	-57dBm
Transmitter		Environmental indicators	
Output Power	H:20W L:10W	Range of working temperature	-30°C ~ +60 °C
4FSK Digital modulation	Only data:7K60FXD, data and voice 7K60FXE	Storage temperature range	-40°C ~ +85 °C
FM modulation	12.5 kHz:8K50F3E, 25 kHz:16K0F3E	Moisture proof	According to MIL-STD-810C/D/E/F standard
Modulation limitation	± 2.5 kHz@12.5KHz, ± 5.0 kHz@25KHz	Shock and vibration	According to MIL-STD-810C/D/E/F standard
FM modulation	-40dB@12.5KHz, -45dB@25KHz		
Emission spurious	-36 dBm $\leq$ 1GHz/-30 dBm $\leq$ 1GHz		
Adjacent channel power	s-60dB/12.5KHz, s-70dB/25KHz		
Frequency response	+1/-3 dB		
Rated Audio Distortion	$\leq 3\%$		
Digital speech coder	AMBE+2™		

Standard Accessories



Programming Cable



Wall panel



Remote Microphone

Optional Accessories



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Dealer Area

ABELL®
DMR Solution Specialist



R50(20)

Single Frequency Repeater

- ▶ Light weight, 3.2Kg
- ▶ Smart size fast deployment
- ▶ ETSI TDMA DMR Protocol
- ▶ Built-in Power Supply
- ▶ No need duplexer
- ▶ 2.0-inch color IPS full-view LCD large screen display, soft keyboard operation
- ▶ Digital processed voice, clear and loud



Product advantages

Light weight
Only a quarter size of regular repeater, 3.2kg light weight, extremely light.

Further communication distance

Unlike traditional repeaters and low-power small repeaters, the R-50 provides 20W of output power without TX power loss, and the improved RX sensitivity of the whole machine which can reach further communication distance.

Convenient power supply, can be fixed both vehicle and mobile deployment

Built-in high-performance power supply, with 110V ~ 240V power supply, and can automatically switch between DC and AC power supply; also provides 12V power supply interface, easy to use removable battery;

Easy installation

ABELL provides an easy wall-hanging device for the R50. It can be installed on the wall at any time without a fixed chassis; at the same time, it provides a standard antenna interface, does not require a duplexer, and has a built-in power supply; whether it is a tall building, a weak electric well or a tunnel installation, it can achieve fast, convenient and low-cost installation in a simple way.

Support single frequency repeater mode, save frequency resources

Only one frequency is needed, the same frequency can be used to transmit and receive signals to achieve signal relay. It can save frequency resources and reduce the difficulty of applying for frequencies license. At the same time, it also saves frequency usage fees.

Support base station mode

The R50 can choose a palm microphone as optional accessory to support base station mode work.

With temperature power control to achieve super stability

When the repeaters temperature reaches 40 degrees, the built-in fan will automatically turn on; when the base station temperature reaches 70 degrees, the power will be automatically reduced until the temperature decreases, which will provide guarantee for the high reliability of R50.

Support voice encryption and authentication

It supports signals transferred with AES256 and ARC4 encryption, also the authentication function based on ABELL encryption protocol. It can improve anti-interference performance, can also ensure the information security during communication.

2.0 inch HD large screen display

Using 2.0 inch high-definition full-view IPS screen, the display is clear and delicate, and it's visible in the strong sunlight.

1600 channels, 100 areas supported

Using large-capacity memory unit, 1600 channels can be stored, 100 zones to meet the needs of different users.

Data and audio signal transmit simultaneously

ABELL has developed the digital simultaneous interpretation function for professional users. During the communication, it supports data and audio signal transmit simultaneously.

Signal adaptation

In the single frequency repeater mode, the terminal adopts an adaptive protocol to receive the transferred signal or the terminal's signal automatically.

Individual call and group call supported

Support individual calls and group calls.

Advantages of ABELL single frequency repeater R50

The common repeater	VS	ABELL SFR repeater R50
Big and heavy		Smart size and light
Occupy many frequencies, difficult to apply license		Occupy less frequencies, easy to apply license
Need a pair of frequencies		Need only one frequency
Need of duplexer		No need of duplexer
Difficult to change the frequency temporarily, and small frequency span		70M frequency range, switch frequency freely
Complex and expensive to install		Can be hung on the wall, simple install, saving cost and labor

Single frequency repeater mode : Common mode and SFR Enhance mode

Common mode	SFR Enhance mode
In common mode, the portable radio can receive both the signal from the repeater and the signal from the other radios. In this mode, both the radio and the repeater do not have fixed time slots for receiving/transmitting, which means, the repeater receives by slot 1, slot 2 for transferring, receives by slot 2, slot 1 for transferring. The portable radio can talk with the nearest radio without going through the repeater if the portable radio's signal coverage is enough.	In ABELL SFR enhance mode, all portable radios can only receive the signal from repeater, to ensure the reliability and consistency of calls. This mode specifies an receiving and transmitting slot for the portable radio, that means, transmitting fixed through slot 1 (or slot 2) and a receiving fixed through slot 2 (or slot 1). This mode can avoid the problem which radios are in communication without transferring by the single frequency repeater, especially the receiving radio firstly receives the weak signal from the transmitting radio, but does not receive the strong signal from the repeater, causing a part of radios in the same system may not receive the transmitting signal from the repeater. This mode need portable radio to be supportive.



Highly integrated design

